Claims

1. A method of generating detector efficiency data for a positron emission tomography scanner including:

a detector array for generating detection data; and

a single photon source,

wherein the method comprises:

conducting an acquisition procedure using the single photon source to produce detection data; and

processing said detection data using an efficiency estimation algorithm to calculate data representative of the efficiencies of individual detectors in said array.

2. A method according to claim 1, where said acquisition procedure includes a blank scan acquisition.

3. A method according to claim 1 or 2, wherein the scanner includes a coincidence detection system for producing coincidence count data (M_{ij}) in the detection data during an acquisition when a positron source is inside the scanner, and wherein the scanner is arranged to produce artificial coincidence count data (M'_{ij}) during an acquisition using the single photon source,

and wherein the step of processing said detection data comprises processing said artificial coincidence count data.

4. A method according to claim 3, wherein the efficiency estimation algorithm is based upon a measurement model which is additive, in that the measured counts of a particular artificially coincident pair of detectors is related to a weighted sum of their individual efficiencies.

5. A method according to any preceding claim, wherein the scanner is a non-rotating scanner.

6. A method according to any of claims 1 to 4, wherein the scanner is a rotating scanner.

7. A method according to claim 6, wherein the scanner comprises two single photon sources and the method comprises selectively operating one of the two single photon sources during the acquisition procedure.

8. A method according to any preceding claim, further comprising generating an output, responsive to said data representative of efficiencies, on an output device for an operator.

9. A method according to any preceding claim, comprising processing said data representative of efficiencies to identify detector elements, or groups of detector elements having relatively low efficiencies.

10. A method according to claim 9, comprising processing said data representative of efficiencies using a function determining a parameter relating to an average over a plurality of detector elements.

11. A method according to claim 9 or 10, comprising processing said data representative of efficiencies using a function determining a parameter relating to an amount of variation therein.

12. Computer software for generating detector efficiency data for a positron emission tomography scanner including:

a detector array for generating detection data; and

a single photon source,

wherein the software is adapted to operate on detection data generated by conducting an acquisition procedure using the single photon source, and

wherein the software is adapted to process said detection data using an efficiency estimation algorithm to calculate data representative of the efficiencies of individual detectors in said array.

13. Computer software according to claim 12, where said acquisition procedure includes a blank scan acquisition.

14. Computer software according to claim 12 or 13, wherein the scanner includes a coincidence detection system for producing coincidence count data (M_{ij}) in the detection data during an acquisition when a positron emitting source is inside the scanner, and wherein the scanner is arranged to produce artificial coincidence count data (M'_{ij}) during an acquisition using the single photon source, and wherein the software is adapted to operate on said artificial coincidence count data.

15. Computer software according to claim 14, wherein the efficiency estimation algorithm is based upon a measurement model which is additive, in that an efficiency of a particular artificially coincident pair of detectors is related to a sum of their individual efficiencies.

16. Computer software according to any of claims 12 to 15, wherein the scanner is a non-rotating scanner.

17. Computer software according to any of claims 12 to 15, wherein the scanner is a rotating scanner.

18. Computer software according to claim 17, wherein the scanner comprises two single photon sources and the method comprises selectively operating one of the two single photon sources during the acquisition procedure.

19. Computer software according to any of claims 12 to 18, wherein the software is adapted to generate an output, responsive to said data representative of efficiencies, on an output device for an operator.

20. Computer software according to any of claims 12 to 19, wherein the software is adapted to process said data representative of efficiencies to identify detector elements, or groups of detector elements having relatively low efficiencies.

21. Computer software according to claim 20, wherein the software is adapted to process said data representative of efficiencies using a function determining a parameter relating to an average over a plurality of detector elements.

22. Computer software according to claim 20 or 21, wherein the software is adapted to process said data representative of efficiencies using a function determining a parameter relating to an amount of variation therein.

23. A data carrier comprising computer software according to any of claims 12 to 22.